FISHERIES
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COUNCIL

1999 Conservation Requirements for Groundfish Stocks

other than Cod in Sub Area 0 and Area 2+3 (except 3Ps)

Report to the Minister of Fisheries and Oceans

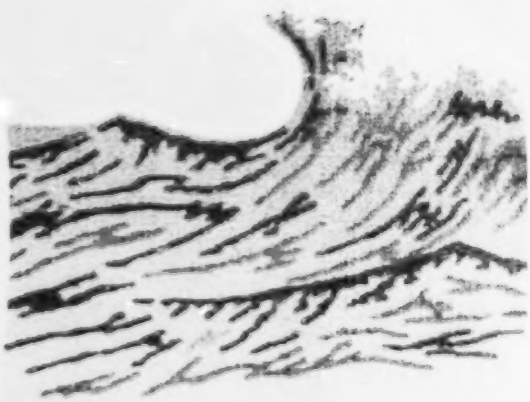

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TABLE OF CONTENTS

Chapter 1: Introduction 4

Chapter 2: Groundfish Stocks Other than Cod in Sub Area 0 and Area 2+3 (except 3Ps) 7

1. Haddock - 3LNO 8
2. Redfish - 2+3K 10
3. American Plaice - 2+3K 12
4. Witch Flounder - 2J3KL 14
5. Greenland Halibut 0B+1B-F 16
6. Roundnose Grenadier - Subarea 0 18
7. Roundnose Grenadier - 2+3 20
8. Lumpfish 22

Appendices: A24

FRCC Mandate and Membership A24
Letter to Stakeholders Questions for Discussion at Consultations A29
Briefs Received for the Newfoundland Consultations A35
Stocks in the NAFO Regulatory Area -- Letter to the Minister A39
NAFO Stock-by-Stock Recommendations for 1999 ..... A47

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Chapter 1: Introduction

This report is one of a series that the Fisheries Resource Conservation Council (FRCC) makes to the Minister of Fisheries and Oceans on conservation measures for groundfish stocks in eastern Canada. This report deals with groundfish stocks other than cod in Sub Area 0 and Area 2+3 (except 3Ps) and makes recommendations for the 1999 fishery.

Every year the Fisheries Resource Conservation Council (FRCC) holds a series of public consultations with stakeholders to gather information on all Atlantic groundfish stocks. This information assists us in forming our recommendations to the Minister of Fisheries and Oceans for annual conservation requirements. For this report we met with fishers and other concerned stakeholders in Grand Falls, Newfoundland on October 7 and in Clarenville, Newfoundland on October 8. We also received a number of written briefs which are noted in appendix 3.

Although this report deals with groundfish stocks in Sub area 0 and Area 2+3, it does not include recommendations for cod stocks in divisions 2GH, 2J3KL and 3Ps or any other stocks in 3Ps. Recommendations for those stocks will be included as part of two separate FRCC reports to the Minister.

Special Zonal Assessment for Cod

For this year again, the Department of Fisheries and Oceans (DFO) Science will be holding a special zonal assessment for the following cod stocks: 2J3KL, 3Ps, 4RS,3Pn and 4TVn. This special assessment is currently scheduled for March 1999 in order to incorporate all available information into the assessment, including all recent surveys and the results of the sentinel and Index fisheries. Until this special zonal assessment is held the FRCC will not be receiving advice from DFO Science on these cod stocks. It is important for everyone to have the results of the latest assessment before we consult on these stocks.

As a result of this change and changes in scheduling of assessments for other groundfish stocks, the FRCC's consultations will be staggered throughout the autumn and into the new year. Our schedule for future consultations includes the following:

November 16-20: 3Ps (except cod), Scotian Shelf / Bay of Fundy , Redfish-Units 1,2,3 and 3O
April/99: Gulf Groundfish Stocks
April/99: Cod Stocks (2J3KL, 3Ps, 4RS,3Pn and 4TVn)

Conservation Issues

During our consultations many concerns were raised about the state and health of groundfish stocks and most of these concerns are dealt with in Chapter 2 of this report in Stock-by-Stock recommendations. However, the Council wishes to high-light some of these concerns and draw particular attention to certain problems.

Greenland Halibut 0B + 1B-F

As part of our previous recommendations on this stock, *Building the Bridge (October 1996)*, we recommended that "the emerging fishery by gillnets in deep water be carefully monitored as it appears to have serious problems." We noted again in our *Report on Gear Technology in Eastern Canada (March 1997)* that many concerns had been expressed by fishers and other stakeholders about the practices associated with this gear type in the deep water turbot fishery. We recommended as part of that report that "...protocols should be established that limit the amount of gear permitted to that which can be handled in a reasonable time period for the vessel size and area, and that restrict the length of soak time. In areas where there is potential for gear loss, and hence for ghost fishing, this shall be taken into account in developing the protocols on gear amounts, and additional requirements on gear specifications incorporated. Consideration should be given to requiring tagging of nets to facilitate quantification and identification of lost gear."

During our consultations for the 1998 season, the problems associated with the excessive use of gillnets at extreme depths were raised more strongly than ever. Fishers expressed grave concerns about the effects of this fishery on the Greenland halibut stocks, especially as it relates to ghost fishing by lost nets, unaccounted mortality as a result of float-outs while the net is being hauled, and discards as a result of deteriorating quality brought on by extended soak times. Participants at consultations also expressed concern with respect to the ghost fishing of gillnets and marine mammals such as narwhal, bowhead and beluga whales which dive to depths of up to 600 fathoms and can become entangled in gillnets.

In our recommendations for 1998 we noted our belief that it was necessary to determine the extent to which these problems existed and as part of our recommendation for this stock we recommended that at-sea observers be deployed in this fishery to gather

specific data on some of the issues addressed by stakeholders.

The Council was glad to see that, for the 1998 fishery, DFO implemented its recommendations regarding the management of the gillnet fishery. While preliminary data from the limited observer coverage seems to indicate that many of the previous concerns are no longer valid, the Council is still concerned with soak time of gillnets and subsequent quality of the catch which could lead to discarding. The Council's recommendations in Chapter two therefore call for a continuation of observer coverage to gain further data on this fishery.

If the concerns which were raised repeatedly at previous consultations are proven to be well founded then there will have to be changes made to the way in which this fishery is conducted. As we recommended in the *Groundfish Conservation Framework for Atlantic Canada (July 1997)*, "...if detrimental effects [of this gear] cannot be mitigated, the technology in question should be banned." While there were no specific comments made during the Council's most recent consultations, fishers at our consultations for the 1998 fishery made the point that there must be a better way to fish and if changes to this fishery are not forthcoming, a possible change in the type of gear employed may have to be recommended.

The Council also shares the views of a number of stakeholders that DFO Science should carry out more scientific work in this area. It was noted that Canada has not carried out any survey work here since 1986 and in recent years this fishery has become a very important stock for a number of fleets, and in particular northern interests.

2+3KLMNO Greenland Halibut

The Council continues to be concerned with the long-term health of this stock. It is a stock that is fished both within and outside Canada's 200-mile limit and, as such, Canada does not have complete control over the management of this fishery. The NAFO Scientific Council has noted that the fishable stock should continue to increase but it was unable to advise on a specific TAC for 1999. However, it noted that an increase of catch from the 1996-97 levels (20,000t) to 30,000t should not impede recovery. It also recommended that measures be considered to reduce, as much as possible, the exploitation of juveniles and the by-catch of 2+3K American plaice.

While the FRCC is encouraged by the signs of good recruitment it was saddened to see that the NAFO Fisheries Commission, at its September 1998 meeting, set the 1999 TAC at 33,000t but made no changes to the existing NAFO Measures to improve conservation. Improvements in conservation measures must be adopted to allow the incoming good year-classes to grow and contribute to the spawning biomass. Juveniles must receive adequate protection and Canada must lead the way. Selectivity work must be undertaken to provide the necessary data to persuade NAFO to increase the existing mesh size from 130 mm to a more appropriate level.

2J3KL Witch Flounder and 2 + 3K American Plaice

The Council continues to be concerned about the prospects for the rebuilding of these stocks. Council is particularly concerned that these species are being captured as by-catch in the Greenland halibut fishery outside of the Canadian zone where 130 mm diamond mesh is used. The Council wishes to re-iterate its concern expressed last year that any amount of by-catch, especially that of juvenile fish, can diminish the chances of recovery for these stocks. Canada should continue to be vigilant in its efforts to keep by-catches to an absolute minimum and to continue to push NAFO to increase the minimum mesh size in the Greenland halibut fishery to a more appropriate level.

By-catch limits

For a number of stocks for which the Council continues to recommend a moratorium on fishing we have, again, recommended that by-catch protocols be applied. This is somewhat different than our recommendations in years previous to 1998 when we had recommended that by-catches be limited to a specific number or otherwise be kept to the lowest possible level. We originally made this change for the 1998 season in light of the obvious difficulty in trying to determine what is an appropriate level of by-catch that will minimize risks for the stocks which are still under moratoria while allowing for continued commercial fishing on other species which are not under moratoria.

We continue to believe that allowing DFO, in conjunction with the industry, to determine the appropriate by-catch levels will achieve a compromise that prevents directed fishing or excessive by-catches on species under moratoria while allowing commercial fisheries to continue. This change in wording should not be interpreted as a relaxing of the FRCC's position that by-catches should be kept to the lowest reasonable level.

During our most recent consultations, a number of stakeholders expressed concern that the by-catch levels outlined in DFO's Small Fish and By-catch Protocol were perhaps being unduly restrictive in some cases and an across-the-board by-catch level may not be the most appropriate way to manage some fisheries. The Council shares these concerns and, as a result, has undertaken a review of by-catch measures. We hope to have suggestions on how to better handle the by-catch issue in our next report.

Chapter 2: Groundfish Stocks Other Than Cod in Sub Area 0 and Area 2+3 (except 3Ps)

Environmental overview

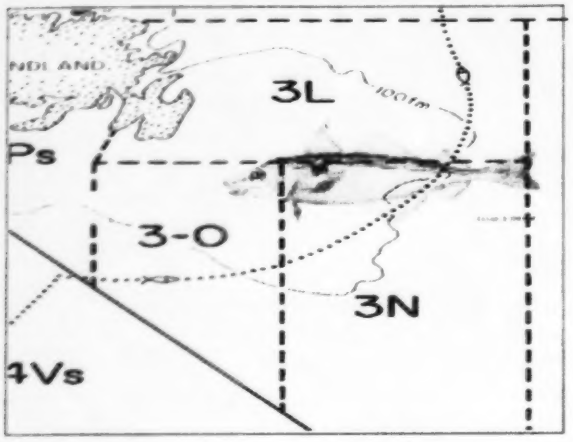
Annual air temperatures over most of the northwest Atlantic were cooler in 1997 compared to 1996. They were however, warmer than normal over the Labrador Sea. Sea ice generally arrived later and left early resulting in a shorter duration than usual, although the extent was greater than in 1996. The number of icebergs reaching the Grand Banks was higher than in 1996 but still about 60% lower than during the early 1990s.

At Station #27 off St. John's, temperatures over all depths were near normal or above normal throughout the water column during winter months. In April the surface waters became cooler than normal and this cooler water extended into May. It gradually extended deeper to reach 100 meters by October. During fall, temperatures in the upper layers were near normal, while bottom temperatures were near normal throughout the year.

Summer salinity values continue to be below the long term average. During the summer of 1997, the area of the cold intermediate layer (CIL) on the Newfoundland shelf was below normal, continuing the declining trend from 1995. Core temperatures were near normal within the CIL.

Off the south coast, the relatively cold conditions which began around the mid-1980s have moderated somewhat, even though below normal bottom temperatures continued through 1996. There was some cooling again in 1997 although temperatures warmed to near normal late in the year in inshore areas.

1. HADDOCK - 3LNO



HISTORY OF FRCC RECOMMENDATIONS:

In November 1993, the Council noted that the TAC had been reduced to 500t for 1993, from 4,100t in 1992, following recommendations from scientists that removals be limited to a by-catch fishery with a precautionary ceiling of no more than 500t. In order to prevent a repeat of the heavy exploitation that was exerted in the mid-1980s on the 1980 and 1981 year-classes, the Council recommended that there be no directed fishing for the 3LNO haddock stock in 1994 and that by-catches be limited to 500t. In November 1994, the Council reiterated its advice for no directed fishery and recommended reducing the by-catch limit to 100t for 1995. The Council noted in 1995 that there had been no signs of improved recruitment and there were no prospects for stock improvement in the near future. It again recommended no directed fishing in either 1996 or 1997 and a by-catch limit of 100t each year.

For 1998, the Council recommended continuation of the prohibition on directed fishing and that by-catch protocols be applied when prosecuting other fisheries.

1998 CONSULTATIONS:

At the consultation in Clarenville, it was noted haddock was once a major fishery and concern was voiced that conservation of this species, with the goal of restraining the stocks to something approaching previous levels, should not be sacrificed in favour of other species occurring in the same area.

ANALYSIS:

The 1996 DFO Stock Status Report and the 1998 Newfoundland Region Groundfish Overview indicate that:

- high catches in the 1980s were due to the strong 1980 and 1981 year classes.
- there is no evidence of more recent strong year-classes.
- this stock will not begin to recover unless there is good recruitment.

Haddock abundance in 3LNO was low throughout the 1979s, higher in 1984-1988, and subsequently low. Very few haddock have been found in recent research vessel surveys. The research surveys show that recent year classes are weak and there are no prospects of the stock improving in the near future. Fish that reach spawning age must be protected if recruitment is to improve in the future for this stock.

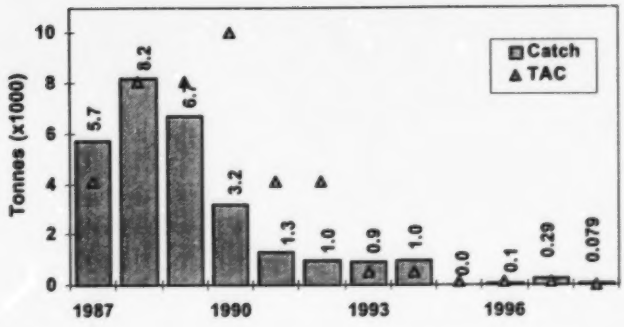
Preliminary information from the 1998 0-group survey (which was not available for inclusion in

RECOMMENDATION # 1:

The FRCC recommends that:

1.1 there be no directed fishing for 3LNO haddock in 1999 and by-catch protocols be applied when prosecuting other fisheries; and,

1.2 DFO Science undertake the necessary work immediately to determine if any areas in 3LNO could be considered as nursery areas for haddock.

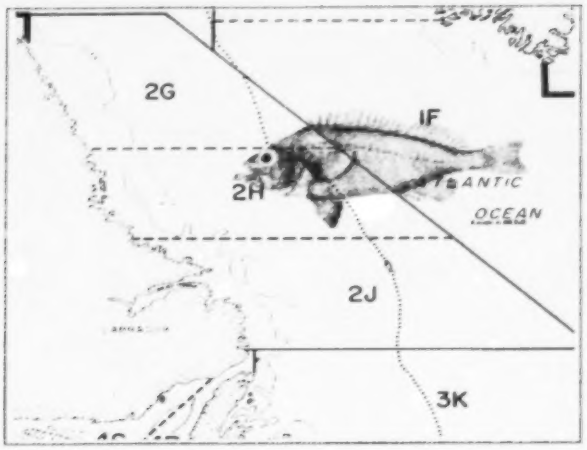


the Groundfish Overview Report) suggests the possibility of a good 1998 year-class. Given that this used to be a major fishery up until the 1960s, the Council believes that measures must be adopted to protect this year class. It is believed that the current NAFO moratorium on various stocks in this area will assist in the protection of this year-class. However, the Council strongly believes that work should be undertaken to determine whether there is any particular area that could be considered as a nursery area.

Council's views on Stock Status:

Overall stock Indicator:	**low**
	Compared to average
Spawning biomass:	**low**
Total Biomass:	**low**
Recruitment:	**production of young haddock has been poor since 1980-81 but preliminary indications from the 1998 survey suggest a possible improvement**
Growth and Condition:	**not available**
Age Structure:	**all recent year classes weak**
Distribution:	**few in 3L**
Recent Exploitation Level:	**unknown; fishing pressure likely reduced due to moratoria on cod and flatfish, and to reduced by-catch limits**

2. REDFISH - 2+3K



HISTORY OF FRCC RECOMMENDATIONS:

In 1993, the Council observed that, given the very low level of this stock, the TAC of 20,000t was too high and recommended, as a precautionary measure, that the 1994 TAC for the 2+3K redfish stock be set at 1,000t. There was practically no fishing during 1994. In November 1994, the Council recommended that any directed fishery, should it be allowed, be carried out within the framework of a scientifically coordinated test fishery and that a nominal amount of 200t be provided for that purpose in 1995. This advice was repeated for 1996.

In October 1996, the Council recommended that there be no directed fishing in 1997 on 2+3K redfish. The same recommendation was made for 1998 with the additional recommendation that by catch protocols be applied when prosecuting other fisheries.

1998 CONSULTATIONS:

The only specific comment received on this stock during the 1998 consultations was that although there has not been any directed fishery for this stock for some time, this may be due to the presence of parasites making the fishing undesirable.

ANALYSIS:

The 1996 DFO Stock Status Report and the 1998 Newfoundland Region Groundfish Overview indicate that:

- there has been virtually no recruitment since early 1970s.
- this stock remains at a very low level.
- there are no indications that the status of the stock will change in a positive way in the foreseeable future.

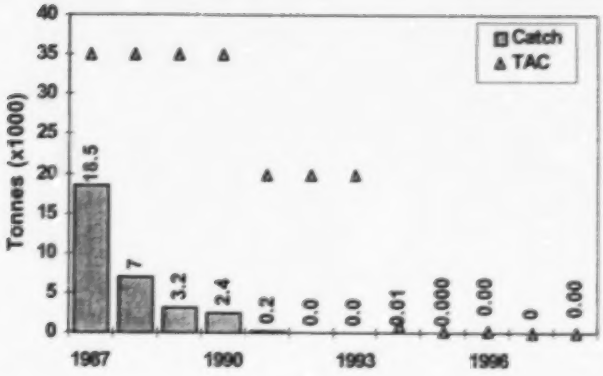
The survey biomass indices fell to extremely low levels in 1994; declines were of the magnitude of about 95-99%. The most recent survey produced somewhat higher catches of small fish but cannot be directly related to historical estimates because of a change in the survey vessel and gear. These index estimates are still low compared to estimates from the mid-1980s. There are no indications of good recruitment. Recruitment into this stock, when it occurs, would require a minimum of 10 years before if would contribute to any fishery. No fishing on this stock is justified.

RECOMMENDATION # 2:

The FRCC recommends that:

2.1 there be no directed fishing in 1999 on 2+3K redfish and that by-catch protocols be applied when prosecuting other fisheries; and,

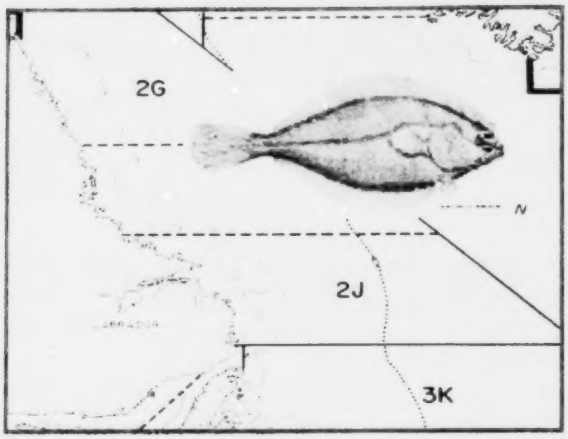
2.2 DFO Science investigate why significant recruitment to this stock has not been observed over the last several decades.



Council's views on Stock Status:

Overall stock Indicator:	**Extremely low**
	Compared to average
Spawning biomass:	**very low**
Total Biomass:	**very low; less than 10% of 1978-88 average**
Recruitment:	**very poor**
Growth and Condition:	**not available**
Age Structure:	**poor; last good year-classes are from the early 1970s**
Distribution:	
Recent Exploitation Level:	**low**

3. American Plaice - 2+3K



History Of FRCC Recommendations:

In November 1993, the Council noted that the spawning biomass was far below any previous level and that there were no signs of good recruitment for this stock. The Council recommended that there be no directed fishing for 2+3K American plaice in 1994 and that by-catches be limited to 500t. The Council re-iterated its recommendation in November 1994 for no directed fishing, together with a reduction in the by-catch limit to 100t. This advice was repeated for 1996.

With no new scientific data available, and no evidence of a change in status of this stock, the advice of previous years - no directed fishing and a by-catch TAC of 100t - was reiterated for 1997. It was also recommended that cooperative science-industry surveys be encouraged in an attempt to increase the data base on the current and ongoing status of this stock.. The recommendation for 1998 was that there be no directed fishery and that by-catch protocols be applied when prosecuting other fisheries.

1998 Consultations:

Questions were asked about the possible decline of this stock as reported catch and landings data do not indicate any overfishing. Concern was expressed that the shrimp fishery, which began in the early 1980s could have played a role because of by-catches. It was noted that from June – July some big fish were found in spawning conditions in nets in the Petty Harbour area.

Analysis:

The 1996 DFO Stock Status Report and the 1998 Newfoundland Region Groundfish Overview indicate that:

- **abundance and biomass are very low.**
- the spawning biomass is only about 2% of peak values.
- reported catches cannot explain the decline.
- in recent years recruitment has been low.
- continues to be no optimism about recovery.

Research vessel surveys continue to show that the stock is at a very low level. In Divisions 2J and 3K combined, the biomass index declined over 95% between 1982 – 83 and 1992 – 94.

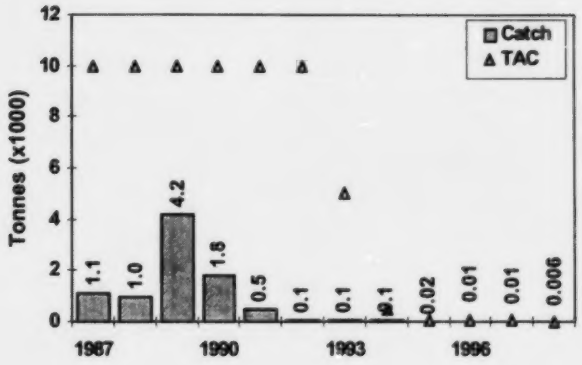
Recommendation # 3:

The FRCC recommends that:

3.1 **there be no directed fishing for 2+3K American plaice during 1999 and that by-catch protocols be applied when prosecuting other fisheries;**

3.2 **co-operative science-industry surveys be developed to increase the data base for this species; and,**

3.3 **DFO Science begin work to determine stock definition, as some stakeholders believe there may be separate stocks in Bays such as St. Mary's and Trepassey.**

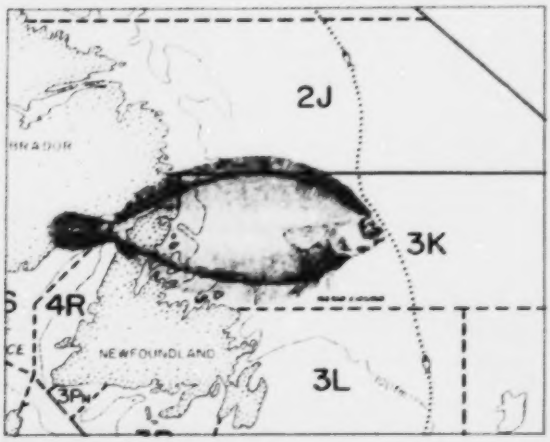


COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**very low**
	Compared to average
Spawning biomass:	**very low**
Total Biomass:	**very low; recent estimates only 10-15% of early 1980s**
Recruitment:	**poor**
Growth and Condition:	**not available**
Age Structure:	**gradual reduction in number of older fish; all age groups depressed**
Distribution:	**moved to deeper water in late 1980s**

Recent Exploitation Level: low; by-catch only

4. Witch Flounder - 2J3KL



History Of FRCC Recommendations:

In 1993, the Council noted that the biomass of witch flounder in 2J3KL was far below any previous estimate in the 15-year time series, and consequently recommended that, as a precautionary measure, the 1994 TAC for 2J3KL witch flounder be reduced to 1,000t. In November 1994, the Council recommended that there be no directed fishing for 2J3KL witch flounder in 1995 and that by-catches be limited to 100t in 1996. The Council repeated this recommendation for 1997.

In October 1996, the Council recommended that there be no directed fishing for 2J3KL Witch flounder in 1997 and that by-catches be limited to 100t. The Council also recommended that cooperative science-industry surveys should be encouraged.

For 1998, the Council repeated its recommendation regarding cooperative science – industry surveys and that there be no directed fishery and that by-catch protocols be applied when prosecuting other fisheries.

1998 Consultations:

During the consultations in Grand Falls, it was noted that it may be difficult to understand why the stock has not improved until we can understand why it declined. At consultations here and in Clarenville it was believed that by-catches in the shrimp fishery in the early 1980's may have played a significant role in its decline.

Analysis:

The 1998 Report of the NAFO Scientific Council indicate that:

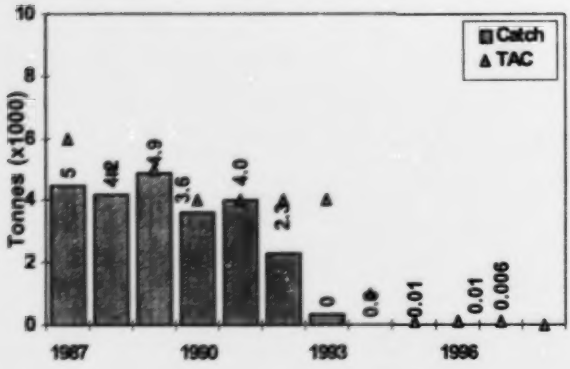
- this stock remains at a very low level.
- there are some indications of movement to deeper waters of 3L.

Witch is a slow-growing species that may live to 30 years. Age groups in the 2J3KL stock have been reduced substantially since the 1970s. There are fewer older fish now. Fishing has generally taken fish from pre-spawning and spawning concentrations. Recently, witch appears to have moved to deeper water (in excess of 900 m). Recent data on this stock indicate that it has dramatically declined since the 1980s; relative biomass in 1994 was estimated to be 4% of the 1986 level. Research surveys in 1996 found that witch was somewhat more abundant in the Flemish Pass area which could make it vulnerable to by-catch in the turbot fishery ouside 200 miles and may have migrated from Canadian waters. Generally, the stock is at the lowest level ever observed and there are no signs of improving recruitment. The shrinking area of distribution of this stock, despite its low biomass, may increase its vulnerability to fishing.

Recommendation # 4:

The FRCC recommends that:

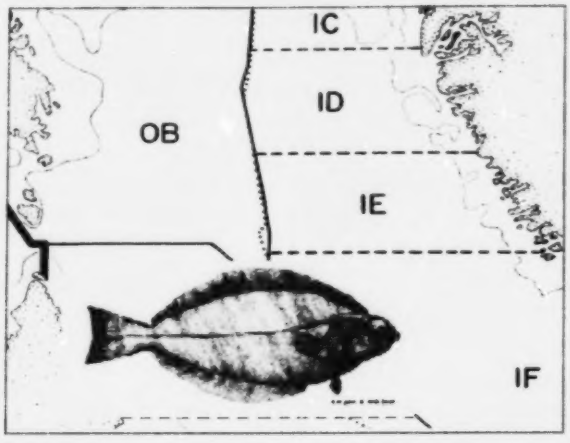
4.1 there be no directed fishing for 2J3KL witch flounder in 1999 and that by-catch protocols be applied when prosecuting other fisheries.



COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**extremely low**
	Compared to average
Spawning biomass:	**very low**
Total Biomass:	**very low**
Recruitment:	**poor; no signs of improvement**
Growth and Condition:	**not available**
Age Structure:	**not available**
Distribution:	**shrinking; may have migrated to deeper waters in early 1990s**
Recent Exploitation Level:	**appears low but if stock has migrated to deeper waters outside the Canadian zone, could be vulnerable to unregulated fishing**

5. Greenland Halibut 0B+1B-F



History Of FRCC Recommendations:

In its first reports (November 1993 and June 1994) on Greenland halibut, the Council recommended that the TAC for Subareas 0+1 be set at 25,000t (12,500t for Subarea 0). Further work of the NAFO Scientific Council in June 1994 led to the recommendation that the 1995 TAC be set below 11,000t for Divisions 0B and 1B-F, i.e., below the offshore catch levels (11,000-15,000t) seen in recent years.

In November 1994, the Council recommended that the 1995 TAC be set below 11,000t and recommended that the conservation merits and feasibility of closing a spawning area in Davis Strait be evaluated in bilateral discussions with Greenland on appropriate sharing arrangements. The 1995 Canadian quota for Subarea 0 was set at 5,500t.

For 1996, the Council repeated its recommendations for a TAC below 11,000t and the feasibility of closing a spawning area in the Davis Strait. Once again in 1997 the Council recommended that Canada and Greenland seek consistency in controls on harvesting and that the feasibility of closing spawning and nursery areas be explored with Greenland. In addition the FRCC expressed concern about the emerging fishery by gillnets in this area and concern about potential for juvenile Greenland halibut by-catch in the shrimp fishery in this area.

Recommendation #5:

The FRCC recommends that:

5.1 **the 1999 TAC for Greenland halibut in 0B+1B-F be set at 11,000t;**

5.2 **Canada and Greenland seek consistency in controls on harvesting Greenland halibut in area 0B+1B-F;**

5.3 **closed spawning areas and closed nursery areas be implemented in the Davis Strait in 1999; and**

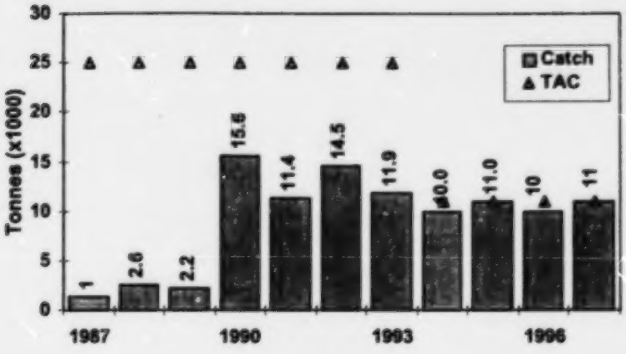
5.4 **as by-catch of juvenile halibut in the Greenland shrimp fishery may become a problem for the stock, Canada pursue with Greenland the implementation of proper conservation measures (e.g., Nordmore grate become mandatory).**

The FRCC continues to be concerned about the conduct of this fishery, especially with respect to the possible loss of gillnets, soak time, and the waste associated with ghost fishing and extended soak times, therefore, the FRCC recommends that:

5.5 **fishing plans for 1999 be such that, net limits reflect the number that can be handled in a period of time that will minimize waste due to quality deterioration, and measures continue to be implemented to reduce net loss and the associated ghost fishing;**

5.6 **observers continue to be deployed in this fishery to gather information on soak times, discard levels, adherence to net limits, net loss and any other information that will assist in decision making related to the conservation of this stock; and**

5.7 **otter trawlers pursuing this fishery be required to use a minimum of 145mm diamond mesh until the results of the joint industry – DFO studies are available on the optimal mesh size and configuration to protect juveniles.**



1998 Consultations:

During consultations in both Grand Falls and Clarenville, it was noted that this stock stands out as being almost the only groundfish holding its own and even getting stronger. This in the face of an active fishery and the existence of a shrimp fishery in Greenland waters that it is said take large amounts of turbot as by-catch. It was suggested that because the turbot probably spawn at a time and location when they are protected from fishing by ice cover and that this could be the reason.

During consultations in Clarenville the representatives of the Nunavut Wildlife Management Board expressed concern over the lack of scientific surveys conducted in the north. This concern was supported by others.

Analysis:

Catches peaked at 18,000t in 1992 but have been stable around 10,500t since then. The catch composition has been stable in recent years. Recruitment estimates at age 1 of the 1992 – 94 year – classes were lower than the presumably good 1991 year-class, but are still considered to be at or above average for the last decade. The 1995 year class was estimated at age 1 to be the highest in the time series, but at age 2 estimated at below average. The 1996 year-class is at the level of the relatively low 1990 year-class. The age composition in the catches has been stable in recent years. The decline in the stock observed until 1994 seems to have stopped and the stock has apparently stabilized at a lower level compared to the late 1980s and early 1990s. The NAFO Scientific Council recommends that the TAC for 1999 should not exceed the current level of 11,000t in Subarea 0 + Division 1A (offshore) +1BCDEF.

The Council was glad to see that DFO implemented its recommendations regarding the management of the gillnet fishery in 1998. However, the Council is still concerned with the soak time of gillnets and subsequent quality of the catch which could lead to discarding. The Council also fully supports the views of the NWMB, and others, that Science should carry out more scientific work in this area. **It is noted that most of the current work has been carried out in Greenland waters and that Canada has not conducted a survey in this area since 1986. As well the Council continues to support the view made during consultations in 1997 that alternative to gill netting this area, such as longlinning, be explored.**

Council's views on Stock Status:

Overall stock Indicator:	**stable**
	Compared to average
Spawning biomass:	**unknown**
Total Biomass:	**lower than in late 1980s and early 1990s**
Recruitment:	**strong 1991 year-class; 1992-94 year-classes average; estimates of 1995 year-class variable; 1996 year-class relatively low**
Growth and Condition:	**unknown**
Age Structure:	**age composition stable in catches in recent years**
Distribution:	**normal**
Recent Exploitation Level:	**unknown**

6. Roundnose Grenadier - Subarea 0

Analysis:

The 1998 NAFO Scientific Council Report notes that the stock found in the Davis Strait is probably connected to the other stocks in the North Atlantic. The stock component found in Subarea 0 +1 is at the margin of the distribution area. Previous Canadian and Russian surveys showed that most of the biomass generally was found in Subarea 1. The exploitation level is considered to be low in recent years and the stock seems to be at very low levels. The Science Council recommends that there be no directed fishing.

History Of FRCC Recommendations:

In its 1993 and 1994 reports, the Council recommended the TAC for Sub-area 0 roundnose grenadier be set at 3,000t. In its 1995 report, Council recommended that should there be directed fishing on this stock, it be done in the context of a scientifically conducted test fishery. In Building the Bridge, Council's November 1996 report, it was recommended that there be no directed fishery on this stock and cooperative industry-science surveys should be encouraged. For 1998, the Council continued its recommendation for no directed fishing.

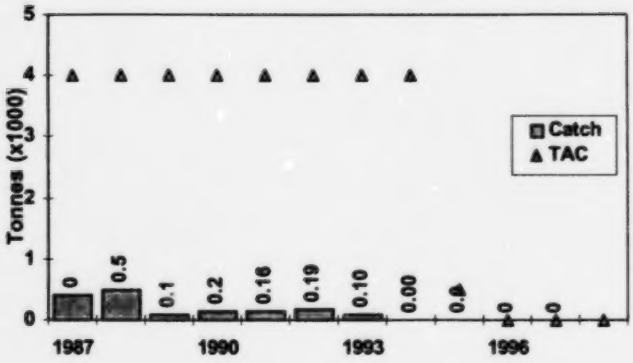
1998 Consultations:

There were no specific comments on this stock during the 1998 consultations.

Recommendation # 6:

The FRCC recommends that:

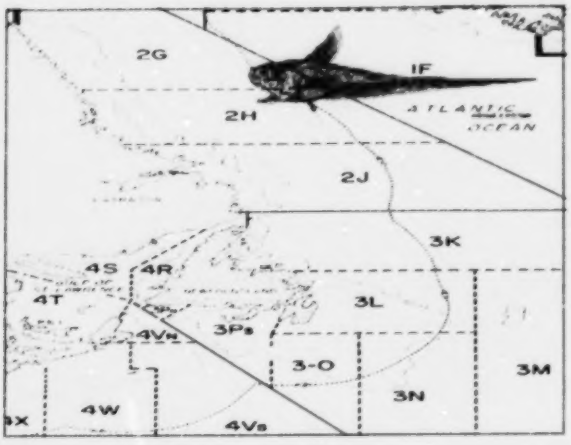
6.1 there be no directed fishing for roundnose grenadier in Subarea 0 in 1999.



COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**very low**
	Compared to average
Spawning biomass:	**likely low (unspecified)**
Total Biomass:	**very low**
Recruitment:	**not available**
Growth and Condition:	**not available**
Age Structure:	**not available**
Distribution:	**unknown**
Recent Exploitation Level:	**low**

7. Roundnose Grenadier - 2+3



Analysis:

The 1998 report of the NAFO Scientific notes that due to limited data it is not possible to determine the state of the stock. Reported catches for each of 1996 and 1997 are 50t, taken as bycatch. The Scientific Council notes that it is not possible to provide any advice for 1999.

History Of FRCC Recommendations:

In earlier reports, released in the fall of 1993, and 1994, the Council recommended that the TAC for roundnose grenadier be set at 4,000t in 1994 and again for 1995. The TAC was set at 500t for 1995. For 1996 and 1997, the FRCC recommended there be no directed fishing on roundnose grenadier in Subarea 2+3 and that cooperative industry science surveys would assist in furthering the knowledge on this stock. For 1998 the Council continued its recommendation that there be no directed fishery

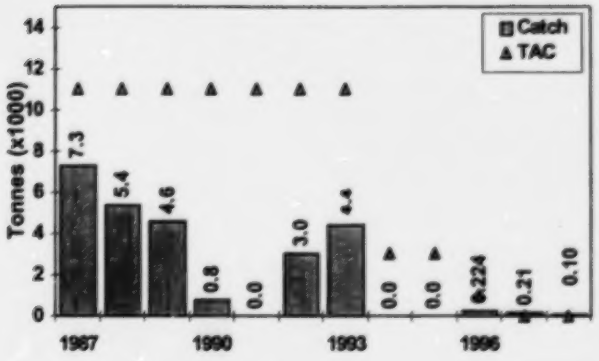
1998 Consultations:

There were no specific comments on this stock during the 1998 consultations.

Recommendation # 7:

The FRCC recommends that:

7.1 there be no directed fishing for roundnose grenadier in 2+3 in 1999.



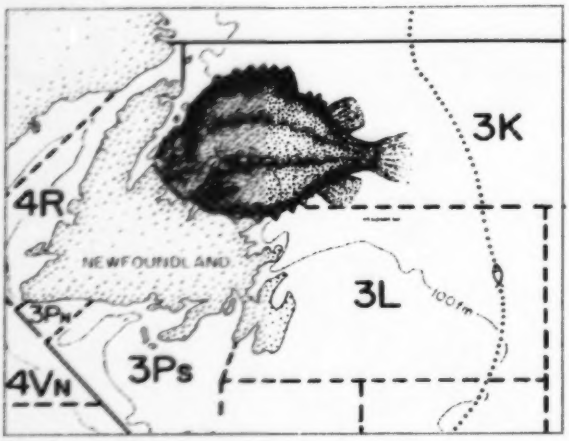
COUNCIL'S VIEWS ON STOCK STATUS:

Overall Stock Indicator: **unknown**

	Compared to average
Spawning Biomass:	**unknown**
Total Biomass:	**unknown**
Recruitment:	**unknown**
Growth and Condition:	**unknown**
Age Structure:	**unknown**
Distribution:	**unknown**

Recent Exploitation Level: **unknown**

8. LUMPFISH



HISTORY OF FRCC RECOMMENDATIONS:

The FRCC first reported on this particular stock in 1995. The Council recommended that management measures, such as shortened season, be used to reduce the effort on this stock. It further recommended that roe content monitoring programs, similar to those employed in the capelin fishery, be established to ensure that fishing takes place at an appropriate time and that closed and protected areas be established for this stock.

In October 1996, the Council recommended that dramatic new management measures be taken to insure conservation of lumpfish in 1997 and that these measures include a combination of the following:

- roe content monitoring programs should be established to determine timing of the fishery to maximize yield/fish;
- closed and protected spawning areas must be established throughout the range of the stock;
- more localized management must be established;
- effort must be further reduced; and
- gear limits must be decreased and the season shortened.

The Council noted that unless these measures were effectively implemented, the closure of this fishery was imminent. For 1998, the Council re-iterated that measures taken to control effort in the past few years be continual and that fishers and Science gather more specific information on this stock through an Index Fisherman Program.

1998 CONSULTATIONS:

At consultations in Grand Falls it was noted that many fished lumpfish in 1998 because there was little else to do at the time. In both Grand Falls and Clarenville there was some concern expressed regarding opening dates. A drop in prices resulted in a drop in effort in many areas.

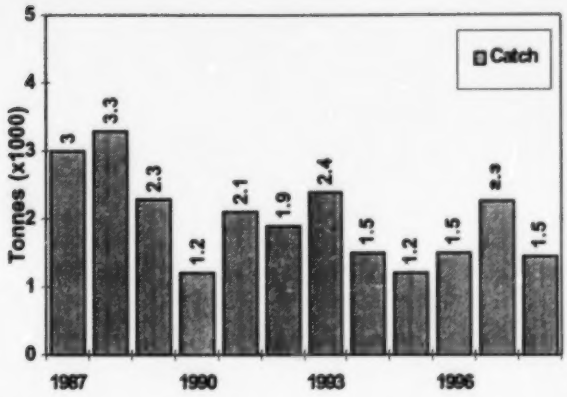
RECOMMENDATION # 8:

The FRCC recommends that:

8.1 **measures taken to control effort in the past few years should be continued;**

8.2 **fishers and managers assess their local stocks and implement appropriate conservation measures in agreement with the local stock status, e.g., full closures, rotating local closures, shortening seasons, effort reductions, and the Department provide the Council with the fishery status by these local areas at the end of the season; and,**

8.3 **fishers and science must continue to gather more information on this stock through the establishment of an Index Fishermen Program especially with respect to: catch and effort levels, spawning patterns, growth rates, maturation, population structure, temperature preferences and habitat preferences. Further recommendations for continuation of this fishery is incumbent upon information of this nature being provided to the council.**



Analysis:

The 1996 DFO Stock Status Report and the 1998 Newfoundland Region Groundfish Overview, indicate that:

- there is little scientific information and inadequate biological sampling.
- there has been a 40% decline in roe landings from the recent average.
- inshore fishermen are nearly unanimous in view that this stock is declining, especially in northern areas.

Lumpfish males establish breeding territories inshore; these may be used year after year. Data from studies which have monitored these territories indicate exceptional impact from the fishery. Landings increased to 2,000t with 3Ps at an all time high of 1,600t in 1997. Preliminary data for 1998 indicates a catch of around 1,400t. The lumpfish fishery is exclusively on pre-spawning mature females and therefore the spawning stock is vulnerable to over exploitation. Since the cod moratorium, there has been an increase in fishers entering this fishery. Research vessel surveys are not considered to be representative of the stock due to the seasonal migratory pattern of this species. There is insufficient new data to determine the status of this resource. The Council cannot emphasize too much its growing concern over where this stock is headed. A continuing fishery that targets only mature spawning females is a recipe for disaster.

The Council believes that in some areas the status quo is not acceptable and more restrictive measures in such localized areas are necessary.

Council's views on Stock Status:

Overall stock Indicator:	**very low on Northeast coast; stable on South coast**
	Compared to average
Spawning biomass:	**likely low on NE coast but seems higher and stable on S coast**
Total Biomass:	**likely low on NE coast but seems higher and stable on S coast**
Recruitment:	**unknown**
Growth and Condition:	**not available**
Age Structure:	**fishery is exclusively on mature females before spawning**
Distribution:	**seasonal migratory patterns; fishing concentrated on inshore spawning areas; distribution likely shifting due to stock decline in 3K and 3L**
Recent Exploitation Level:	**fishery regulated by effort; number of participants in fishery increased since cod moratorium; number of nets allowed and duration of fishery have been reduced in recent years**

APPENDIX 1:

FRCC MANDATE AND MEMBERSHIP

APPENDIX 1: FRCC TERMS OF REFERENCE AND MEMBERSHIP

1. INTRODUCTION

The Government of Canada is committed to a more comprehensive approach to the conservation and management of our fisheries resource. This approach demands a better understanding of complex fisheries ecosystems - the interaction of fish with other species, predator-prey relationships, and also changes in the marine environment like ocean currents, water temperatures and salinity.

The Government of Canada is also committed to a more effective role in decision-making for those with practical experience and knowledge in the fishery.

The Minister of Fisheries and Oceans has established the Fisheries Resource Conservation Council (FRCC) as a partnership between government, the scientific community and the direct stakeholders in the fishery. Its mission is to contribute to the management of the Atlantic fisheries on a 'sustainable' basis by ensuring that stock assessments are conducted in a multi-disciplined and integrated fashion and that appropriate methodologies and approaches are employed; by reviewing these assessments together with other relevant information and recommending to the Minister total allowable catches (TACs) and other conservation measures, including some idea of the level of risk and uncertainty associated with these recommendations; and by advising on the appropriate priorities for science.

2. DEFINITION OF CONSERVATION

Fisheries conservation is that aspect of the management of the fisheries resource which ensures that its use is sustainable and which safeguards its ecological processes and genetic diversity for the maintenance of the resource. Fisheries conservation ensures that the fullest sustainable advantage is derived from the resource and that the resource base is maintained.

3. COUNCIL OBJECTIVES

3.1 To help the government achieve its conservation, economic and social objectives for the fishery.The conservation objectives include, but are not restricted to:

3.1.1 rebuilding stocks to their 'optimum' levels and thereafter maintaining them at or near these levels, subject to natural fluctuations, and with 'sufficient' spawning biomass to allow a continuing strong production of young fish; and,

3.1.2 managing the pattern of fishing over the sizes and ages present in fish stocks and catching fish of optimal size.

3.2 To develop a more profound understanding of fish-producing ecosystems including the inter-relationships between species and the effects of changes in the marine environment on stocks.

3.3 To review scientific research, resource assessments and conservation proposals, including, where appropriate, through a process of public hearings.

3.4 To ensure that the operational and economic realities of the fishery, in addition to scientific stock assessments, are taken into account in recommending measures to achieve the conservation objectives.

3.5 To better integrate scientific expertise with the knowledge and experience of all sectors of the industry and thus develop a strong working partnership.

3.6 To provide a mechanism for public and industry advice and review of stock assessment information.

3.7 To make public recommendations to the Minister.

4. Mandate and Scope

4.1 The Fisheries Resource Conservation Council will address these objectives by bringing together industry, DFO science and fisheries management, and external scientific and economic expertise in one body.

4.2 The Council will:

4.2.1 advise the Minister on research and assessment priorities;

4.2.2 review DFO data and advise on methodologies;

4.2.3 consider conservation measures that may be required to protect fish stocks;

4.2.4 review stock assessment information and conservation proposals, including through public hearings, where appropriate; and,

4.2.5 make written public recommendations to the Minister on TACs and other conservation measures.

4.3 The Council may recommend any measures considered necessary and appropriate for conservation purposes such as TACs, closure of areas to fishing during specific periods, approaches to avoid catching sub-optimal sized fish or unwanted species, and restrictions on the characteristics or use of fishing gears.

4.4 The Council's scope includes Canadian fish stocks of the Atlantic and Eastern Arctic Oceans. In the first instance, the Council will address groundfish, and then subsequently take on responsibility for pelagic and shellfish species.

4.5 The Council is also responsible for advising the Minister on Canada's position with respect to straddling and transboundary stocks under the jurisdiction of international bodies such as the Northwest Atlantic Fisheries Organization (NAFO).

5. Size, Structure and Make-Up

5.1 The Council will consist of not more than 14 members with an appropriate balance between 'science' and 'industry'.

5.2 Members are chosen on merit and standing in the community, and not as representatives of organizations, areas or interests.

5.3 'Science' members, are drawn from government departments, universities or international posts, and are of an appropriate mix of disciplines, including fisheries management and economics.

5.4 'Industry' members are knowledgeable of fishing and the fishing industry and understand the operational and economic impacts of conservation decisions.

5.5 All members of the Council are appointed by the Minister.

5.6 All members, including the Chairperson, are appointed for a three year term; terms can be renewed.

5.7 Members appointed from DFO serve 'ex officio'.

5.8 Members have to disclose any interest in the Atlantic or Eastern Arctic fishery and take appropriate measures so as to avoid potential or real conflict of interest situations during the term of appointment.

5.9 The four Atlantic Provinces, Quebec and the Northwest Territories may each nominate one delegate to the Council. These delegates have access to the Council's information, and may participate fully in meetings, but will not be asked to officially endorse the formal recommendations to the Minister.

5.10 The Council is supported by a small Secretariat, to be located in Ottawa. The Secretariat will:

5.10.1 provide administrative support for the functioning of the Council;

5.10.2 provide a technical science and fisheries management support;

5.10.3 organize Council meetings;

5.10.4 record decisions of the Council;

5.10.5 undertake a professional communications function for the Council, providing a central point for communications to and from the Council; and

5.10.6 undertake such other matters as from time to time might be appropriate.

5.11 The Chairman may appoint an Executive Committee, consisting of the Chairman, Vice-Chairman, and three other Members.

5.12 In addition, the Chairman may, from time to time, strike an 'ad hoc' committee to deal with a specific issue.

6. ACTIVITIES:

6.1 Reviews appropriate DFO science research programs and recommends priorities, objectives and resource requirements.

6.2 Considers scientific information - including biology, and physical and chemical oceanography, taking into account fisheries management, fishing practices, economics and enforcement information.

6.3 Conducts public hearings wherein scientific information is presented and/or proposed conservation measures/options are reviewed and discussed.

6.4 Recommends TACs and other conservation measures.

6.5 Prepares a comprehensive, long-term plan and a work plan for the Council which are reviewed annually at a workshop with international scientists and appropriate industry representatives.

6.6 Ensures an open and effective exchange of information with the fishing industry and contributes to a better public understanding of the conservation and management of Canada's fisheries resource.

FRCC MEMBERSHIP:

MEMBERS:

Fred Woodman, Chairman
Jean-Claude Brêthes, Vice-Chair
Osborne Burke
Bruce Chapman
Tony Charles
Ernest Despres
Jean Guy d'Entremont
Sally Goddard
Tom Hallett
Frank Hennessey
Dan Lane
Paul LeBlond
Edward McAlduff
Louis Schofield
Trevor Taylor
Maureen Yeadon

PROVINCIAL DELEGATES:

Stephen Atkinson, Northwest Territories
Paul Cormier, New Brunswick
David Gillis, Prince Edward Island
Dario Lemelin, Québec
Dave Lewis, Newfoundland and Labrador
Clarrie MacKinnon, Nova Scotia

EX OFFICIO:

Guy Beaupré
William Doubleday
Barry Rashotte

SECRETARIAT:

Chris Allen, A/Executive Director
Andrée-Anne Guibord
Tracey Sheehan
Debra Côté
Denis Rivard
Lisa Tenace

NEWFOUNDLAND AND LABRADOR FRCC GROUNDFISH ASSESSMENT TEAM:

Trevor Taylor, Chair
Jean Guy d'Entremont
Dave Lewis
Sally Goddard
Tom Hallet
Edward McAlduff

APPENDIX 2:

LETTER TO STAKEHOLDERS AND QUESTIONS FOR DISCUSSION AT CONSULTATIONS

APPENDIX 2: LETTER TO STAKEHOLDERS

September 14, 1998

To Stakeholders:

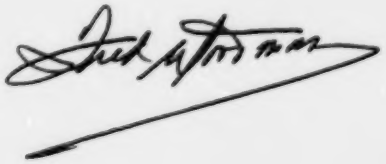
The Fisheries Resource Conservation Council (FRCC) will be holding public consultations to gather information on **Sub-Areas 0, 2 +3 (except 3Ps) stocks other than cod** on October 7 and 8, 1998. This will assist the FRCC in making recommendations to the Minister of Fisheries and Oceans for 1999 conservation requirements. The Council will conduct further consultations in November on 3Ps stocks (except cod) once it has received and reviewed DFO's scientific assessments.

Consultations will be held at 9:00 AM on October 7 in Grand Falls/Windsor at *the Mount Payton Hotel* and October 8 in Clarenville at *the Clarenville Inn.* Discussion will be limited to the following stocks:

HADDOCK	(3LNO)
REDFISH	(2+3K)
AMERICAN PLAICE	(2 + 3K)
WITCH FLOUNDER	(2J3KL)
GREENLAND HALIBUT (TURBOT)	(0B+1B-F, 2+3)
SKATE	(3LNOPs)
ROUNDNOSE GRENADIER	(0, 2+3)
LUMPFISH	

Stakeholders may make public presentations by way of oral presentation or by providing the FRCC with a written brief at P.O. Box 2001, Station D, Ottawa,ON K1P 5W3, phone (613) 998-0433, fax (613) 998-1146 or via Internet: www.ncr.dfo.ca/frcc.

Your participation at these consultations is important and we look forward to hearing your views.



Fred Woodman
Chairman

Questions For Discussion At Consultations

3LNO Haddock

For both 1996 and 1997 the Council had recommended that there be no directed fishing for this stock and that bycatches be limited to 100t. At consultations for 1998, it was noted that bycatches were increasing and fishers, not wishing to see other fisheries closed because of increased haddock bycatch, believed that the bycatch limit should be increased to 500t for 1998. The Council subsequently recommended no directed fishery and that the standard bycatch protocols be applied when fishing other species. Bycatches to September 2 are only 75t. Is this an indication that the stock is in worse shape than believed? What have you observed when fishing for other species in this area?

2+3K Redfish

At the consultations for 1998 it was noted that there were no indications of good recruitment and that when recruitment does occur, it would require a minimum of 10 years before it would contribute to any fishery. Have you noticed anything that might indicate a change in status for this stock?

2+3K American Plaice

During consultations for the 1998 fishery, it was noted that prospects for rebuilding this stock in the foreseeable future were poor. The Council continued its recommendation that there be no directed fishery for this stock and that cooperative science-industry surveys be developed to increase the data base. Were such surveys carried out? Have you noticed anything that might indicate a change in status for this stock?

2J3KL Witch Flounder

Council recommendations for 1998 were the same as for American plaice. During consultations for 1998 it was noted that the stock was at the lowest level ever observed. Were any joint science-industry surveys carried out in 1998? Is there any improvement in the status of this stock? Have you noticed anything that might indicate a change in status for this stock?

0B+1B-1F Greenland Halibut

During consultations in 1997, many concerns were expressed about the deepwater gillnet fishery. For 1998 the Council made a number of recommendations concerning management measures that should be implemented for this fishery. It was recommended that a limitation be set on the number of gillnets to a level that could be handled in a period of time that would minimize waste due to quality deterioration and measures be implemented to reduce net loss and the associated ghost fishing. Were the limitations outlined in the Conservation Harvesting Plans low enough? Were adequate measures put in place to ensure reduced net loss? Were observers placed on enough vessels to get an adequate information on soak times, discard levels, adherence to net limits, net loss and any other information that will be useful in future decision making.
Otter trawlers were limited to a minimum mesh size of 155 mm square mesh. Is this size adequate to protect juvenile fish? Were any closures of spawning or nursery areas implemented in 1998? Do you think we should be working towards less gillnets and more long lines in this fishery?

2+3 Greenland Halibut

There has been some controversy over the minimum mesh size in this, and the Sub-Area 0, fishery. The current mesh size for trawls is 155 mm diamond or 165 mm square in the codend. Is this mesh size adequate to protect juvenile fish? There have also been reports of considerable bycatches of Greenland halibut in the shrimp fishery in this area - what is the magnitude of these catches?

Sub-Area 0 Roundnose Grenadier

Since 1995, the Council has recommended that there be no directed fishing for this stock. Is there any reason to change this recommendation for 1999?

Sub-Area 2+3 Roundnose Grenadier

Since 1996 there has been no directed fishing for this stock. Is there any reason to change this recommendation for 1999?

3LNOPs Skates

The skate fishery in many areas is conducted almost entirely in small concentrated areas. Have other areas been explored? Has there been a decrease in the size of the fish in your catch?

Flatfish And Flounders

There has been talk of a minimum mesh size for deepwater flounder. What, in your opinion should this size be?

Lumpfish

A number of measures have been implemented in recent years to control effort, i.e. less nets, shorter season, etc. In your opinion have these been successful in reducing the decline of this stock?

Other Stocks

Are there other groundfish stocks found in Sub-Areas 2+3 (other than NAFO-managed stocks or those found in 3P) that the Council should be concerned about?

General

During any 1998 fishery (i.e., crab, shrimp, scallops, skate, etc.) what has been your general observations on the fishing grounds?

APPENDIX 3:

BRIEFS RECEIVED FOR THE NEWFOUNDLAND CONSULTATIONS

APPENDIX 3: BRIEFS RECEIVED FOR THE NEWFOUNDLAND CONSULTATIONS

FRCC.98.GR-NF.1 Captain Clarence Cabot - Mt. Pearl, Newfoundland

FRCC.98.GR-NF.2 Mr. Peter Corcoran - St. Mary's Bay, Newfoundland

FRCC.98.GR-NF.3 Groundfish Enterprise Allocation Council - Ottawa, Ontario

APPENDIX 4:

STOCKS IN THE NAFO REGULATORY AREA

REPORT TO THE MINISTER OF FISHERIES AND OCEANS

JULY 1998

STOCKS IN THE NAFO REGULATORY AREA - LETTER TO THE MINISTER

July 22, 1998

The Honourable David Anderson, P.C., M. P.
Minister of Fisheries and Oceans
200 Kent St.
Ottawa, Ontario
K1A 0E6

Dear Minister:

Section 4.5 of the Terms of Reference of the Fisheries Resource Conservation Council (FRCC) states:

> **"The Council may also advise the Minister on the position to be taken by Canada with respect to straddling and transboundary stocks under the jurisdiction of international bodies such as the Northwest Atlantic Fisheries Organization (NAFO)."**

Consequently, the FRCC has reviewed the Report of the NAFO Scientific Council with specific reference to matters of particular interest to Canada, and offers advice on Total Allowable Catches for 1999 and other conservation measures for NAFO managed stocks as well as 2J3KL cod and Greenland halibut in 2&3KLMNO. The FRCC also participated in government/industry consultations on this matter on June 25, 1998.

The FRCC notes that the status of these stocks in 1998 is much the same as in 1997. With the exception of yellowtail flounder in Divisions 3LNO and Greenland halibut in 2&3KLMNO, there is no indication of improved recruitment. Biomass levels are at historic lows and the outlook in the mid to long term is poor. With the lack of recruitment in four of these stocks, improvement in biomass levels is uncertain.

A. 2J3KL COD (NORTHERN COD)

Once Canada's largest cod stock on the East Coast, this stock has been declining since the early 1990s. Biomass is less than 10% of the long term average and shows limited signs of recruitment despite a moratorium since 1992. Recent year classes are exceptionally weak. Natural mortality has increased significantly by a factor of 3 to 4.

It is clear that the harp and hooded seal populations continue to grow at an alarming rate. In 1996, these populations have increased to 4.9 million and 600 thousand animals respectively and consumed 3.8 million tonnes of fish in Atlantic Canada. Of the total prey consumption, it is estimated that 73% comes from Divisions 2J3KL. The majority of groundfish consumed are pre-recruits to the commercial fishery. Without a doubt, this is having an extremely negative impact on stock recovery. Distribution of the cod is concentrated in the southern range of the stock where it could also be vulnerable to over-exploitation in the NAFO Regulatory Area. Despite an improvement in 1996, age at maturity has declined since 1991 which is indicative of a stock under stress.

The FRCC reiterates its recommendation, made in *Conservation Stay the Course* (1994) , for the development and implementation of "an action plan to achieve a meaningful reduction in the seal populations."

The FRCC recommends that Canada's position supports a continuing of the moratorium on fishing 2J,3KL cod in the NAFO Regulatory Area.

B. GRAND BANKS KEY STOCKS

There are six NAFO-managed straddling stocks on the Grand Banks which are of significant importance to Canada. These are:

American plaice in Divisions 3LNO
Witch flounder in Divisions 3NO

Yellowtail flounder in Divisions 3LNO
Cod in Divisions 3NO
Redfish in Divisions 3LN
Greenland halibut in Divisions 2&3KLMNO

The following table shows the TACs and catches since 1990:

Stock		90	91	92	93	94	95	96	97	98
Am. Plaice	TAC	24.9	25.8	25.8	10.5	4.8	0	0	0	0
3 LNO	Catch	32.5	34.7	13.4	17.1	7.4	0.6	0.9	1.4	
Yellow Tail	TAC	5	7	7	7	7	0	0	0	4
3LNO	Catch	13.8	16.3	10.2	13.6	2.1	0.1	0.3	0.8	
Witch	TAC	5	5	5	5	3	0	0	0	0
3NO	Catch	4.2	4.8	5	4.4	1.1	0.3	0.4	0.5	
Cod	TAC	18.6	13.6	13.6	10.2	6	0	0	0	0
3NO	Catch	29	29	12.6	9.7	2.7	0.2	0.2	0.4	
Red	TAC	25	14	14	14	14	14	11	11	0
3LN	Catch	29.1	25.8	27.3	21	6	2	0.5	0.6	
G. Halibut	TAC	50	50	50	50	25	27	27	27	27
2&3KLMNO	Catch	47.5	65	63.2	42-62	51	15	19	20	

As can be seen, with the exception of witch in Divisions 3N0 and, more recently Greenland halibut and redfish, catches have significantly exceeded TACs. These excess catches have occurred in the Regulatory Area outside the 200 mile limit and have included large amounts of juvenile fish caught both by member and non-member countries. Canada's share of the TACs are: American plaice 98.5%; witch 60%; yellowtail flounder 97.5%; cod 47.6%; redfish 42.6%; and Greenland halibut 37%. The following highlights key information on these stocks based on the Report of the NAFO Scientific Council:

1. 3LNO AMERICAN PLAICE

Although once the largest flatfish fishery in the Northwest Atlantic, and despite having been under a moratorium since 1995, this stock remains at a low level and abundance continues to decline. The NAFO Scientific Council advises that there have been no strong year classes since 1987 and the population is composed of fish less than seven years old. Catches have more than doubled since 1995 (to 1,400t), despite the moratorium, mainly due to the catch of plaice in the Greenland halibut fishery and the unregulated skate fishery in the Regulatory Area. The FRCC has great concern about the increasing exploitation on this fragile resource. It is expected that by-catch will further increase in the reopened yellowtail flounder fishery in 3NO in 1998.

The FRCC supports the NAFO Scientific Council recommendation that:

(a) there be no directed fishery for American plaice in Divisions 3LNO in 1999.

The FRCC also recommends that:

(b) measures be undertaken to minimize the by-catch of American plaice in the Greenland halibut, yellowtail flounder and skate fisheries;

(c) the mesh size in the NAFO Regulatory Area be increased to 145 mm mesh;

(d) key juvenile nursery grounds be protected through the establishment of closed areas; and,

(e) there be 100% observer coverage in directed fisheries where American plaice is a by-catch.

2. 3LNO YELLOWTAIL FLOUNDER

The NAFO Scientific Council advises that, based on survey data, this stock has increased in size since 1994. The 1992 and 1993 year classes are well above the long term average and age structure has remained stable. The NAFO Scientific Council notes that a directed fishery on yellowtail flounder will result in a by-catch of American plaice and cod in 3NO and that this should be taken into account in recommending Total Allowable Catches.

The FRCC supports the NAFO Scientific Council recommendation that:

(a) a TAC for 1999 not exceed 6,000t;

(b) the directed fishery be confined to Divisions 3NO;

(c) this fishery be carefully monitored;

In addition, the FRCC recommends that:

(d) measures be undertaken to minimize the by-catch of American plaice and cod in this fishery;

(e) key juvenile fishing areas be protected by implementing closures;

(f) a minimum mesh size of 145 mm be implemented;

(g) fishing on spawning concentrations be minimized; and,

(h) there be 100% observer coverage in this fishery.

3. 3NO WITCH

The NAFO Scientific Council advises that the 1998 biomass estimate for witch in 3NO is the lowest observed and there is evidence that stock size is continuing to decline despite a moratorium since 1995.

The FRCC supports the NAFO Scientific Council recommendation that:

(a) there be no fishing on 3NO witch in 1999 to allow for stock rebuilding; and

(b) the by-catch of this species be kept at the lowest possible level.

4. 3NO COD

The NAFO Scientific Council advises that biomass levels for this stock are at an all time low and year class strength in the population is very weak. Recruitment is poor and the once dominant 1989 and 1990 year classes are at low levels.

The FRCC supports the NAFO Scientific Council recommendation that:

(a) there be no directed fishing for cod in 3NO in 1999; and

(b) by-catches of this stock be kept at the lowest possible levels.

5. 3LN REDFISH

Despite a TAC of 11,000t in 1997, almost no effort was deployed in this fishery because of poor catch rates.
The NAFO Scientific Council advises that biomass levels in 3L are low and recruitment in this area has been poor since the mid 1980s. There is evidence of an increase in biomass in 3N due to the growth of the 1986 and 1987 year classes but recruitment since that time has been weak. This stock remains at low levels.

The FRCC supports the NAFO Scientific Council recommendation that:

(a) there be no directed fishery in 3LN redfish in 1999; and,

(b) by-catches be kept at the lowest possible level.

6. GREENLAND HALIBUT 2&3KLMNO

The NAFO Scientific Council advises that above average recruitment in the period 1990-1995 has led to improvement in biomass levels in the 2 and 3KLMNO Greenland halibut stock. While the fishable biomass was below the long term average in 1997, it is expected to increase in 1998 and 1999 as these year classes recruit to the fishery. Catches consist mainly of immature fish which results in loss of potential yield from the stock. Biomass distribution indicates a small proportion (19%) of the biomass is located in Divisions 3LMNO.

Juvenile Greenland halibut in the shrimp fishery must be addressed.

The NAFO Scientific Council advises that an increase in catch in 1999 to about 30,000t should not impede recovery. The FRCC does not support an increase in the TAC to 30,000t in 1999 unless appropriate measures are implemented to improve conservation.

Therefore, the FRCC recommends that:

(a) minimum mesh size be increased to 145 mm in the NAFO Regulatory Area to protect juvenile Greenland halibut;

(b) the by-catch of American plaice be kept at the lowest possible levels;

(c) the by-catch of Greenland halibut in the Canadian 3K shrimp fishery be kept at the lowest possible levels; and,

(d) there be 100% observer coverage in this fishery.

Regardless of the TAC level set for 1999, the FRCC considers it essential that the above conservation measures be implemented.

In addition, the FRCC recommends that:

(e) research continue to define biomass distribution and abundance in the various management areas throughout the stock to assess the impact of high fishing mortality on the southern portion of the stock.

CONCLUSIONS:

With the exception of yellowtail flounder and Greenland halibut estimated biomass levels for the above stocks are at or near the lowest levels ever observed and stock rebuilding potential is uncertain. Measures adopted by the NAFO Fisheries Commission have, for the most part, not stopped the continuing decline of these stocks. To be effective in reversing the decline, a more radical approach is necessary. By-catch levels of stocks currently under moratoria are of great concern to the FRCC and could be impeding stock recoveries.

The FRCC recommends that, with the exception of yellowtail flounder and Greenland halibut, Canada's position be a continued moratorium on fishing the above stocks both inside and outside the 200 mile limit until the current declines are arrested and sufficient rebuilding occurs.

In addition to the above stocks for which we have given specific recommendations, the FRCC fully supports the NAFO Scientific Council recommendations for continued moratoria on 3M cod and 3M American plaice. We also believe that the moratorium on 3NO capelin should be continued.

C. EXPLOITATION OF UNREGULATED SPECIES

There continue to be groundfish fisheries taking place in the NAFO Regulatory Area in an unregulated manner, i.e. no TAC levels. The catch of skate, for example, has doubled from 1994 to 1997 from 5,000t to 10,000t respectively. An increase of this magnitude is certainly one which raises serious conservation concerns for this stock. In addition, there are multispecies ramifications for groundfish resources in the area that are in a severely depressed state. For example, it is believed that the high increase of catches of American plaice in Divisions 3LNO is largely attributable to the increased catch of skate in the NAFO Regulatory Area. We are also aware that there is an unregulated fishery for roughhead grenadier which raises similar concerns.

The FRCC believes that, as a precautionary measure, catches of unregulated species must be controlled to avoid overexploitation and possible stock collapse. **The FRCC recommends that NAFO adopt measures to ensure that catches of unregulated species do not exceed 1994 levels in the Regulatory Area. In addition , the NAFO Scientific Council should be requested to recommend sustainable harvest levels.**

D. CONSISTENCY IN CONSERVATION MEASURES

Conservation measures adopted by the NAFO Fisheries Commission should be consistent with those that already apply in Canadian waters. For example, the use of conservation harvesting plans, small fish protocols, mandatory dockside monitoring and closures during peak spawning periods are common features of Canada's domestic fishery that would greatly improve the NAFO conservation regime.

Canadian harvesters must not bear the burden of conservation alone in the management of these fishery resources.

E. THE CANADIAN NAFO POSITION

The FRCC fully supports a Canadian position with the following objectives:

1. The implementation of an enforcement program that is truly effective. An integral part of this package must be an observer program with 100% coverage and an effective reporting system that is a permanent feature of the NAFO conservation regime. Consistency in its application among all NAFO Contracting Parties is essential.

2. The adoption of the advice of the NAFO Scientific Council with respect to establishment of annual Total Allowable Catches and other conservation measures as well as the additional conservation measures set out in this document.

3. The continuation of the moratorium on fishing cod in 3L in the NAFO Regulatory Area.

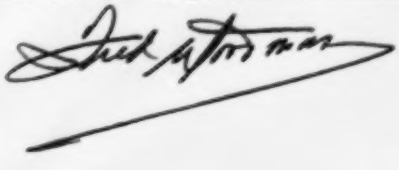
4. The continuation of the moratorium on fishing shrimp in 3LNO until such time as cod and other groundfish species have recovered.

5. With the exception of redfish, an increase in minimum mesh size to 145mm.

6. The continuation of diplomatic efforts to eliminate uncontrolled fishing by Non-Contracting Parties and the reflagging of vessels in an effort to circumvent conservation requirements in the NAFO Regulatory Area.

We trust these comments are helpful to you and wish you the best in the upcoming NAFO meetings.

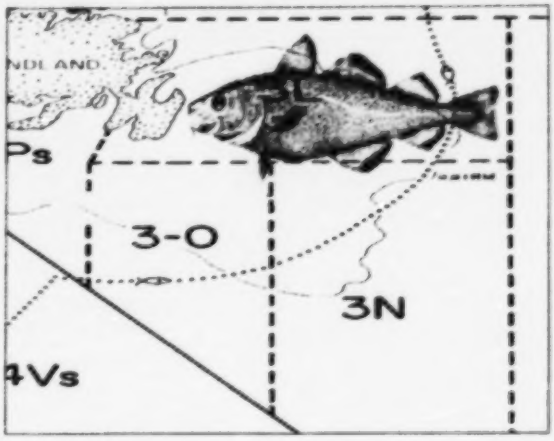
Sincerely yours,



Fred Woodman
Chairman

NAFO STOCK-BY-STOCK RECOMMENDATIONS FOR 1999

COD 3NO



HISTORY OF FRCC RECOMMENDATIONS:

In 1994, the NAFO Scientific Council warned that the spawning stock biomass could not begin to recover unless the 1989 and 1990 year-classes survive to maturity. In particular, they indicated that rebuilding would not happen if fisheries on immature fish were to continue at the then current high levels. In June 1995, NAFO scientists indicated that this stock was at an all time low in 1994 and was represented mainly by 2 year-classes (those of 1989 and 1990). They also noted that the year-classes since 1990 appeared to be weak and the estimates of the 1989 and 1990 year-classes, which were believed to be average, were much lower than previously estimated. The NAFO Scientific Council recommended that there be no direct fishing for cod in 1996, 1997 and again in 1998 and that by-catches in fisheries targeting other species should be kept at the lowest possible level. Their recommendations are unchanged for 1999 and the Council points out that the most recent surveys suggests that all year-classes are now at a low level and the 1996 biomass is estimated to be at an extremely low level.

In its August 1994, 1995, 1996 and 1997 letters to the Minister of Fisheries and Oceans, the Fisheries Resource Conservation Council recommended a continuation of the moratorium.

In September 1997, the NAFO Fisheries Commission agreed to continue the moratorium (in place since 1995) on directing for cod in 3NO in 1998.

ANALYSIS:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- biomass at extremely low level.
- stock at an all time low with weak representation from all year-classes.
- all recent (since 1990) year-classes are now at a low level.
- no analytical assessment possible due to lack of biological sampling.

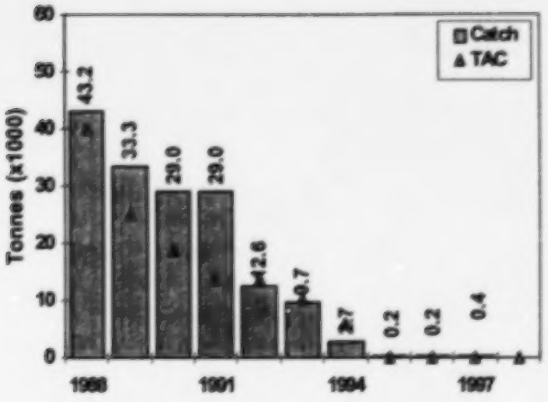
The Council shares the NAFO Scientific Council concern with the current low levels of biomass and the lack of recruitment for this stock. Survey data used in estimating recent year-classes indicates that recruitment has been almost non-existent since the 1990 year-class. The medium term indicates poor prospects due to low spawner biomass, low recruitment and high mortality. Recovery will require a number of relatively strong year-classes that survive to maturity,

RECOMMENDATIONS

The FRCC supports the NAFO Scientific Council recommendation that

1) there be no fishing for cod in 3NO in 1999 to allow for stock rebuilding; and

2) bycatches of this stock be kept at the lowest possible levels.

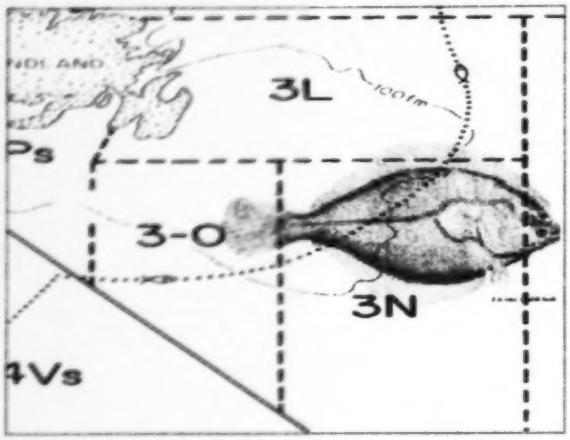


rebuilding the spawner biomass. Consequently, the Council considers that no directed fishing should take place in 1998 and that by-catches should be kept to the lowest possible level.

COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**very low level**
	Compared to average
Spawning biomass:	**likely at very low level**
Total Biomass:	**at historically low levels**
Recruitment:	**all year classes at low levels**
Growth and Condition:	**no special comment**
Age Structure:	**all year classes weak**
Distribution:	**no special comment**
Recent Exploitation Level:	**under moratorium since 1994**

AMERICAN PLAICE 3LNO



HISTORY OF FRCC RECOMMENDATIONS:

In the June 1994 Report of the NAFO Scientific Council, scientists indicated that the abundance of American plaice in 3LNO was at a record low level making stock rebuilding uncertain and recommended no fishing for 1995. Concerns persisted and their recommendations for 1996 and 1997 echoed those for 1995, but adding that by-catches should also be reduced to the lowest possible level. Given the extremely low population size, the concerns with respect to the spawning biomass, and the apparently large mortality on juvenile plaice, the NAFO scientists continued their same recommendation for 1998 and now for 1999.

In its letters of August 1994, 1995 and 1996 to the Minister of Fisheries and Oceans, the Fisheries Resource Conservation Council recommended continuing the moratorium for American plaice in Divisions 3LNO. The Council also pointed at the need to address the concerns raised by the exploitation of immature fish in directed fisheries by non-Contracting Parties, as well as the suspected high and increasing by-catches of American plaice in the Greenland halibut fishery by both Contracting and non-Contracting Parties. The Council was particularly concerned with the low levels of biomass and the apparent lack of recruitment for this stock.

In its August, 1997 letter to the Minister of Fisheries and Oceans, the FRCC again recommended continuing the moratorium for 1998 including implementing measures to minimize by-catches in the Greenland halibut fishery including an increase in the minimum mesh size to 145 mm. The Council also recommended protecting juvenile nursery grounds through the establishment of closed areas to all fishing activity.

In September 1997, the NAFO Fisheries Commission agreed to continue the moratorium (in place since 1995)on fishing 3LNO American plaice in 1998 but did not increase mesh size or implement any other measures to protect juvenile nursery areas.

ANALYSIS:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- stock at a low level.
- biomass not increasing and abundance continues to decrease.

RECOMMENDATIONS

The FRCC supports the NAFO Scientific Council recommendation that:

1) there be no directed fishery for American plaice in Divisions 3LNO in 1999.

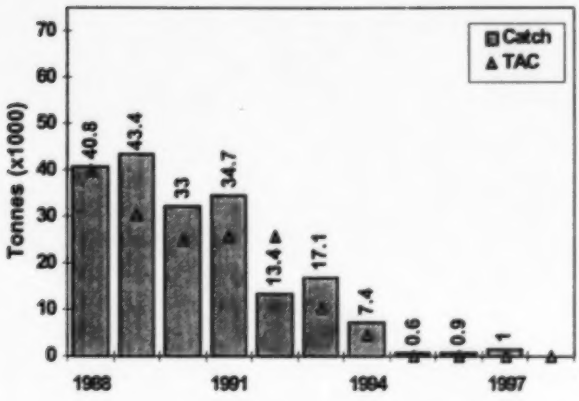
The FRCC also recommends that:

2) measures be undertaken to minimize the by-catch of American plaice in the Greenland halibut, yellowtail flounder and skate fisheries;

3) the mesh size in the NAFO Regulatory Area be increased to 145 mm mesh;

4) key juvenile nursery grounds be protected through the establishment of closed areas; and,

5) there be 100% observer coverage in directed fisheries where American plaice is a by-catch.



- No good year-classes since 1987.
- Stock composed of fish less than 7 years old.

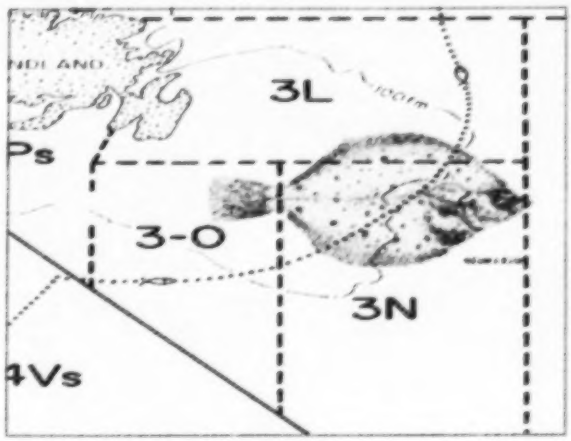
Although once the largest flatfish fishery in the Northwest Atlantic, and in spite of being under a moratorium since 1995, surveys suggest that this stock has reached a very low level and could still be in decline.

The Council continues to believe that a recovery of this stock is unlikely in the short term.

Council's Views on Stock Status

Overall stock Indicator:	**very low**
	Compared to average
Spawning biomass:	**very low**
Total Biomass:	**very low**
Recruitment:	**no good year-classes since 1987**
Growth and Condition:	**no special observation**
Age Structure:	**stock composed mainly of fish < 7 years old**
Distribution:	**no special observation**
Recent Exploitation Level:	**under moratorium**

YELLOWTAIL FLOUNDER 3LNO



HISTORY OF FRCC RECOMMENDATIONS:

In its June 1994 report, the NAFO Scientific Council noted that the stock remained at a low level and that potential growth on the stock from the relatively large 1984-86 year-classes had not occurred, likely because of large catches of these cohorts as juveniles by fisheries in the Regulatory Area, and because the TAC had been exceeded each year from 1984. To rebuild this stock as fast as possible, NAFO scientists recommended that no fishing be permitted in 1995.

In its June 1995 Report, the NAFO Scientific Council re-affirmed its previous concerns and also noted that the geographic distribution of this stock had contracted, making it very vulnerable to over-exploitation. They recommended that there be no directed fishing in 1996 and that by-catches be reduced to the lowest possible level, a recommendation that they repeated for 1997. In its June 1997 report, the scientists noted that based on 6 additional surveys since the 1996 assessment, the current view was that the stock size had increased since 1994 although the level of this increase could not be quantified. The Scientific Council noted that the stock should be able to sustain a limited fishery in 1998 and recommended that the TAC not exceed 4,000t. Scientists noted that a precautionary approach should be taken, however, as any directed fishery for yellowtail would result in by-catches of American plaice and cod.

In its June 1998 report, the Scientific Council, recommends a TAC of 6,000t for 1999 and re-emphasizes its caution regarding by-catches of American plaice and cod.

In its letters of August 1994, 1995 and 1996 to the Minister of Fisheries and Oceans, the Fisheries Resource Conservation Council recommended the continuation of the moratorium for

RECOMMENDATIONS

The FRCC supports the NAFO Scientific Council recommendation that:

1) a TAC for 1999 not exceed 6,000t;

2) the directed fishery be confined to Divisions 3NO;

3) this fishery be carefully monitored;

In addition, the FRCC recommends:

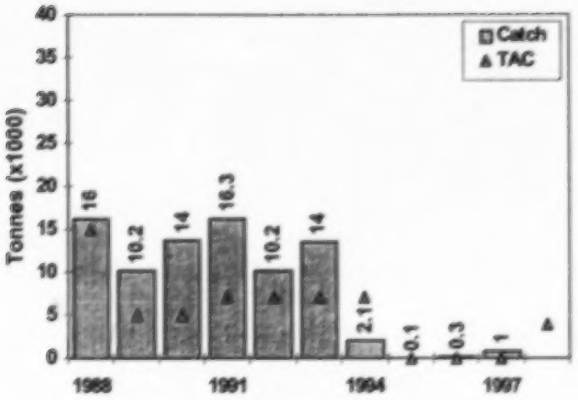
4) measures be undertaken to minimize the by-catch of American plaice and cod in this fishery;

5) key juvenile fishing areas be protected by implementing closures;

6) a minimum mesh size of 145 mm be implemented;

7) fishing on spawning concentrations be minimized; and,

8) there be 100% observer coverage in this fishery.



1995, 1996 and 1997. The Council also pointed out the need to address the concerns raised by the exploitation of immature fish in the directed fisheries in the Regulatory Area by non-Contracting Parties. The Council was particularly concerned with the low levels of biomass and the lack of recruitment for this stock.

At its September 1996 meeting, the NAFO Fisheries Commission agreed to continue the moratorium in 1997 (in place since 1995).

In its August 1997 letter to the Minister of Fisheries and Oceans, the Council recommended a TAC of 4,000t for 1998, provided a number of specific conditions were met to protect juvenile yellowtail as well as to keep by-catches of American plaice and cod to the lowest possible level. The NAFO Fisheries Commission set the 1998 TAC at 4,000t.

ANALYSIS:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- stock size has increased based on 7 surveys conducted since 1994.
- 1992 and 1993 year-classes are well above the long term average (since 1984).
- age structure has remained stable in all surveys.

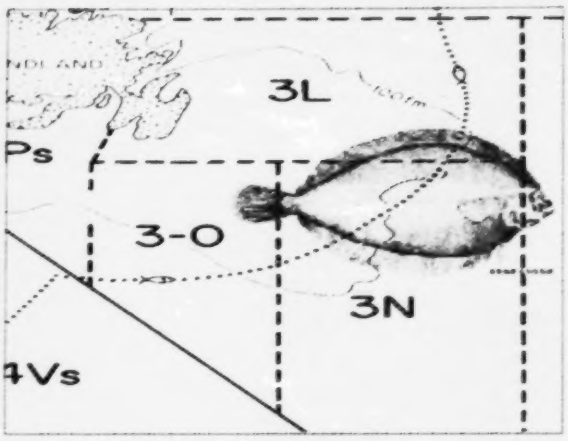
The view of the Scientific Council is that the stock size has increased over the past year and the stock is perceived to be at a level close to that of the mid-1980s.

The FRCC fully supports the recommendations of the NAFO Scientific Council to delay the beginning of the fishery until after peak spawning has taken place, to confine the yellowtail fishery to divisions 3NO, and to ensure that careful monitoring and sampling take place. Because by-catches of American plaice could be substantial in this fishery and because of the necessity to protect juvenile flatfish in the known nursery areas, the FRCC also considers that any fishery on yellowtail should be carried out under strict small fish protocols.

COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**gradual improvement**
	Compared to average
Spawning biomass:	**improving**
Total Biomass:	**appear to have returned to a level close to that of the mid-1980s**
Recruitment:	**the 1992 and 1993 year-classes well above average**
Growth and Condition:	**weight at age stable**
Age Structure:	**stable, with several cohorts**
Distribution:	**mainly concentrated in 3NO; low in 3L but some expansion in 3L may be taking place**
Recent Exploitation Level:	**has been reduced due to moratorium**

WITCH FLOUNDER 3NO



ANALYSIS:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- the 1998 biomass estimate is the lowest observed.
- data suggests stock continuing to decline.
- stock remains at a low level.

The Council believes that this stock remains at a very low level and the at the moratorium, along with a reduction in by-catches in other fisheries, should be continued in 1999.

HISTORY OF FRCC RECOMMENDATIONS:

In June 1994 the NAFO Scientific Council indicated that this stock was likely at a very low level and recommended that no fishing be permitted on witch flounder in Divisions 3NO in 1995 in an effort to rebuild this stock to former levels. The Scientific Council re-iterated the same recommendation for 1996 but added that by-catches should also be reduced to the lowest possible level. The scientists made the same recommendations for 1997 and 1998.

In its letters of August 1994, 1995, 1996 and 1997 to the Minister of Fisheries and Oceans, the Fisheries Resource Conservation Council recommended a continuation of the moratorium.

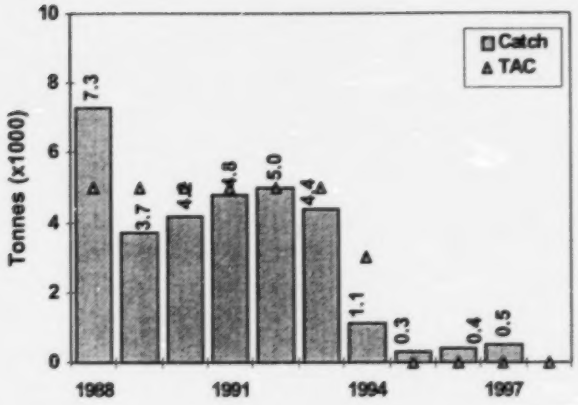
In September 1997, the NAFO Fisheries Commission agreed to continue the moratorium (in place since 1995) on fishing 3NO witch flounder in 1998 and to keep by-catches to the lowest possible level..

RECOMMENDATIONS

The FRCC supports the NAFO Scientific Council recommendation that:

1) there be no fishing on 3NO witch in 1999 to allow for stock rebuilding; and

2) the bycatch of this species be kept at the lowest possible level.

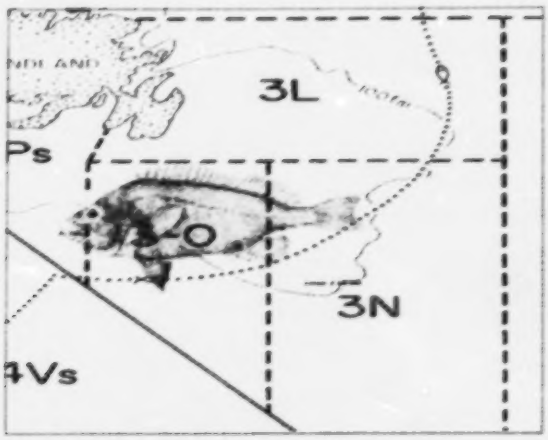


Council's views on Stock Status:

Overall stock Indicator:	**very low**
	Compared to average
Spawning biomass:	**likely at low level**
Total Biomass:	**low; the 1998 survey estimate is lowest observed**
Recruitment:	**no observation**
Growth and Condition:	**no observation**
Age Structure:	**no data**
Distribution:	**no special observation**

Recent Exploitation Level: under moratorium

REDFISH 3LN



HISTORY OF FRCC RECOMMENDATIONS:

In its 1994 report, the NAFO Scientific Council noted that there was no estimate of recruitment available but that it appeared poor in Division 3L since the early 1980s and that available indices exhibited considerable between-year variability but generally indicated a stock at a low level, especially in 3L. Their recommendation for 1995 was for a total catch not to exceed 14,000t.

In its June 1995 report, the Scientific Council concluded that redfish abundance was very low in Division 3L, with no sign of good recruitment. In Division 3N, they observed that the stock has declined from 1984 to 1991 but that "the status since then is uncertain" and made the same recommendation for 1996 as for 1995. In 1996, NAFO scientists, although noting that there was concern for the future given the general lack of good recruitment, had no basis to change their previous recommendation and for 1997 recommended that catches should not exceed 14,000t. In its June 1997 report, the Scientific Council noted that the stock appeared to be at a very low level and recommended that there be no directed fishing in 1998 and by-catches be kept at the current low level, recommendations that were accepted by the Fisheries Commission.

In its June 1998 report, NAFO scientists have reaffirmed earlier statements that, based on available data, the stock appears to be at a very low level. However, there are indications of some increase in 3N due to growth of the relatively strong 1986-87 year-classes. They recommend continuation of no directed fishing in 1999 and that by-catches be kept to the lowest possible level.

The Fisheries Resource Conservation Council made no specific recommendation on this stock for 1995. In its August 1995 letter to the Minister of Fisheries and Oceans, the Council concluded that a cautious approach was crucial and that the TAC for 1996 should be substantially reduced from the then current level of 14,000t, probably to a level below the 1994 catch of 7,000t. The NAFO Fisheries Commission reduced the 1996 TAC to 11,000t. .

In its August 1996 letter to the Minister of Fisheries and Oceans, the FRCC recommended a substantial reduction in this TAC. In September 1996, the NAFO Fisheries Commission set the TAC for 1997 at 11,000t.

The FRCC also cautioned that any expansion of the 3M shrimp trawl fishery into 3LN should be discouraged. The FRCC noted with concern the high discard rate of small flatfish and redfish in other shrimp fisheries and the effect this could have on recruitment and loss of yield for these stocks, which were at critically low levels. Given

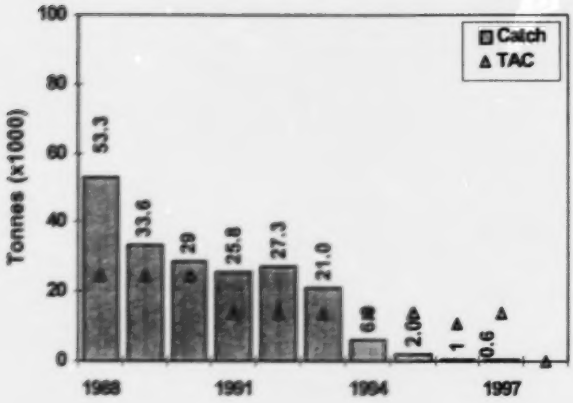
RECOMMENDATIONS

The FRCC supports the NAFO Scientific Council recommendation that:

1) there be no directed fishery in 3LN redfish in 1999;

2) bycatches be at the lowest possible level; and,

3) a joint industry-science investigation into the relationship between mixing of the 3LN and 3O redfish stocks be undertaken.



these reasons, the FRCC recommended that the approach taken by Canada at NAFO in the previous year with respect to any 3LN shrimp trawl fishery be continued.

In its August 1997 letter, the FRCC recommended continuation of the no directed fishery for 1998 and that by-catches be kept to the lowest possible level. The Council also reiterated its recommendation concerning expansion of the 3M shrimp fishery into 3LN.

ANALYSIS:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- biomass low in 3L , where poor recruitment has persisted since early 1980s.
- little or no sign of good recruitment since 1986 and 1987 year classes.
- stock at a very low level.

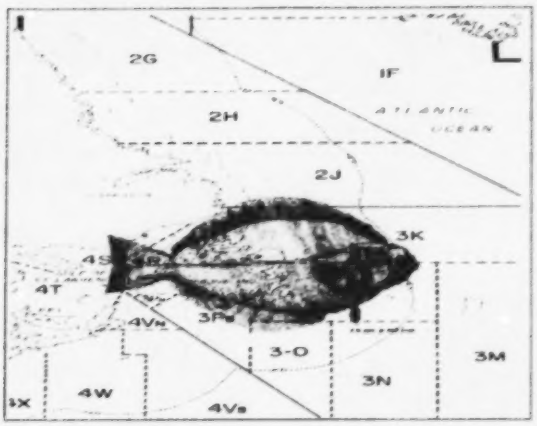
The Council notes that the catch in 1997 (600t) was the second lowest historically (453t in 1996). The Council considers that the shortfall of the catch below the TAC in recent years is largely the result of unsuccessful commercial fisheries carried out by member states. This is likely an indication of the poor status of the stock. With no sign of good recruitment since the 1986-87 year classes, the prospects for rebuilding the 3LN redfish stock are poor.

The Council continues to believe that an expansion of the shrimp trawl fishery from 3M to 3LN should be discouraged so that juvenile redfish are given maximum protection. The Council believes that the approach taken by Canada at NAFO with respect to this possible expansion should be continued.

COUNCIL'S VIEWS ON STOCK STATUS:

Overall stock Indicator:	**very low**
	Compared to average
Spawning biomass:	**likely very low level**
Total Biomass:	**very low level**
Recruitment:	**little sign of good recruitment after 1986-87 year classes**
Growth and Condition:	**typically slow growth**
Age Structure:	**dominated by 1986-87 year classes**
Distribution:	**no special comment**
Recent Exploitation Level:	**low; reduced effort since 1994**

GREENLAND HALIBUT 2 + 3KLMNO



HISTORY OF FRCC RECOMMENDATIONS:

In August 1993, the Council called for significant reductions in catches in the NAFO Regulatory Area and for a joint commitment to address scientific questions related to stock structure. For 1994, the Council concluded that the TAC should be reduced substantially and that catches in the order of the historical catch level of 25,000t should be a maximum level.

In June 1994, the Council noted the absence of controls on the foreign fishery outside 200 miles and recommended that all means be taken by Canada to limit the effort on this stock. In November 1994, the Council reiterated that catches in the order of the historical catch level of 25,000t should be a maximum level.

The NAFO Scientific Council concluded in June 1995 that the TAC for Greenland halibut in 2+3KLMNO should continue to be set at levels well below the catches achieved in previous years until it became clear that the stock was increasing. In addition, the Scientific Council recommended that measures be considered to reduce, as much as possible, the exploitation of juvenile Greenland halibut.

In August 1995, the FRCC re-iterated the need for maintaining reduced TACs. The conclusion of the Scientific Council that the large catches of immature Greenland halibut were a major impediment to stock rebuilding was noted. The Council suggested that Canada's objective for the near future should be to rebuild the stock to biomass levels of the early 1980s in order to support a sustainable fishery in the long-term. The NAFO Fisheries Commission concluded at the September 1995 meeting that the 1996 TAC would be set at 20,000t for Greenland halibut in

RECOMMENDATION

The FRCC recommends that:

1) measures be taken to protect Greenland halibut juveniles in 2+3 such as small fish protocols;

2) Canada continue to propose to NAFO that the minimum mesh be increased to 145mm in the NAFO Regulatory Area; and

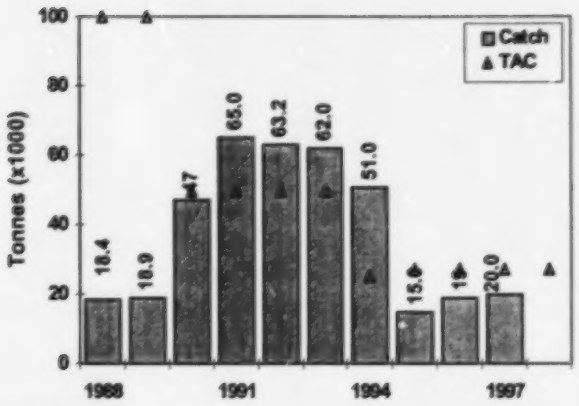
3) the by-catch of American plaice be kept to the lowest possible level.

Following the September 1998 NAFO Annual meeting, the FRCC further recommends that:

4) efforts by DFO Science to determine distribution and abundance (by management area) through out the stock area continue with a view to presenting new information for consideration by the NAFO Scientific Council in June 1999;

5) otter trawlers pursuing this fishery be required to use a minimum of 145mm diamond mesh until the results of the joint industry – DFO studies are available on the optimal mesh size and configuration to protect juveniles; and

6) the by-catch of Greenland halibut in the Canadian 3K shrimp fishery be monitored closely and be kept at the lowest possible level.



3LMNO, with an additional TAC of 7,000t to be allowed in SA2+3K (Canada only).

In 1996, the Council indicated that the above-average year-classes from the 1990's must be protected to allow the stock to rebuild and that catching large numbers of these fish as juveniles would waste the potential for rebuilding the stock. In September 1996, the NAFO Fisheries Commission concluded that the 1997 TAC would continue to be set at 20,000t for Greenland halibut in 3LMNO. The Canadian quota for 1997 in 2+3K was established at 7,000t in keeping with the FRCC recommendations. Again for 1998, the Council recommended the Canadian quota in 2+3K remain at 7,000t.

1998 Consultations:

During the 1998 consultations, concern was raised regarding the extent of by-catch of this stock in the new 3K shrimp fishery. It was noted that the distribution of this stock has changed over time. The stock used to be fished in the Bays but is now more of an offshore fishery in deeper water. In Clarenville, stakeholders noted that both this and the stock in 0+1 were becoming important stocks for fishermen in the north and in Sub-area 2+3.

Analysis:

The June 1998 report of the NAFO Scientific Council makes the following observations:

- fishering mortality not precisely known, but believed to be above sustainable levels during 1990-94.
- above average recruitment is indicated for all year classes from 1990-95.
- indices of fishable biomass well below average in 1997, but should increase in 1998-99 as some of these year classes recruit to fishable status.

The NAFO Scientific Council notes that the fishable stock should continue to increase. It further notes that while it is unable to advise on a specific TAC for 1999, an increase in catch from 1996-97 levels (20,000t) to about 30,000t should not impede recovery. It also recommends that measures be considered to reduce, as much as possible, the exploitation of juveniles and the by-catch of American plaice. The FRCC is encouraged by the signs of good recruitment and notes that continued conservation measures should allow these year classes to grow and contribute to the spawning biomass in the near future provided that juveniles receive adquate protection.

Despite these positive signs, we believe it would be premature at this stage to increase catch levels until the stock has benefited more substantially from this recruitment.

The Council notes that catches from this stock continue to consist mainly of immature fish and

Council's views on Stock Status:

Overall stock Indicator:	**improving**
	Compared to average
Spawning biomass:	**fishable biomass still below average**
Total Biomass:	**continuing to show signs of recovery**
Recruitment:	**good year-classes since 1990**
Growth and Condition:	**no special observation**
Age Structure:	**older age-groups remain at low levels**
Distribution:	**fall surveys show that only 19% of biomass is in 3LMNO**
Recent Exploitation Level:	**reduced in 1995 and 1996**

believes that additional measures such as increased mesh size and small fish protocols should be implemented in the NAFO Regulatory Area so as to be consistent with similar practices inside the Canadian zone.

The council wrote to the Minister of Fisheries and Oceans prior to the 1998 NAFO Meeting stating that it did not support the NAFO Scientific Council's view that the catch level in 1999 could increase to about 30,000t, unless appropriate measures are implemented to improve conservation. At its September 1998 meeting, NAFO subsequently set the TACat 33,000t; but with no changes in existing measures to improve conservation; which gave Canada a quota of 8,556t in 2+3K.

200 Mile Fishing Zone and NAFO Fishing Boundaries